

### **REMARKS/ARGUMENTS**

New Claim 17 has been added. Claim 17 recites the method of Claim 13 wherein the step of forming a melt is done in a high-frequency melting furnace. Support for Claim 17 is found on page 8, line 13 and page 10 lines 19-20. Thus, no new matter has been added.

### **Rejections under 35 U.S.C. §103(a)**

Claim 13, 14, and 16 stand rejected under 35 U.S.C. §103(a) as being unpatentable over JP 60-250557 to Yanagihara et al. (hereinafter “Yanagihara”) in view of JP 11-106847 to Tsukahara et al. (hereinafter “Tsukahara”). As currently claimed, independent Claim 13 recites a method for manufacturing a hydrogen absorbing alloy having a  $\text{CaCu}_5$  type crystal structure in its principal phase, comprising: forming a melt of elemental components selected to form a hydrogen absorbing alloy; and adding a Mg source material to said melt in an amount of 0.1 to 1.0% by weight based on the entire weight of the hydrogen absorbing alloy, wherein the Mg source material is a Mg alloy with a melting point of 650°C or higher.

To establish a *prima facie* case of obviousness there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings. In other words, obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. *In re Fritch*, 972 F.2d 1260, 23 U.S.P.Q.2d 1780, 1783 (Fed. Cir. 1992). Additionally, “[t]he mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification.” *In re Gordon et al.*, 733 F.2d 900, 902 (Fed. Cir. 1984). Furthermore, the teaching or suggestion to make the claimed invention must be found in the prior art, not in applicant’s disclosure. The Office has not proven a *prima facie* case of obviousness because the necessary motivation for combining the cited references in the manner suggested by the Office is lacking.

In general, Yanagihara is directed to providing a sealed alkaline battery having a lowered increase of internal pressure due to overcharging. More specifically, Yanagihara teaches a nickel

based hydrogen storage alloy by mixing elements, including elemental Mg, to predetermined composition ratios and placing them into an arc melting furnace. See page 4, lines 12-14. At paragraph 3 of the Office Action dated August 2, 2006, the Office stated that the “overall composition has a formula that would make the crystal structure to be of the  $\text{CaCu}_5$  type”; a hexagonal lattice structure. The Office recognizes that Yanagihara does not teach adding a Mg source material with the specific amount claimed, 0.1 to 1.0% by weight based on the entire weight of the hydrogen absorbing alloy. The Office contends that it would have been obvious from Tsukahara to have used an MgNi alloy as a source material and optimize the amount added.

Unlike Yanagihara, Tsukahara is directed to producing a hydrogen absorbing alloy from a vanadium-based alloy having a high oxygen concentration. Tsukahara teaches heating and melting a vanadium-based alloy raw material together with a deoxidizer. One such deoxidizer is  $\text{Mg}_2\text{Ni}$ . In particular, Tsukahara teaches that by adding  $\text{Mg}_2\text{Ni}$ , oxygen contained in a vanadium-based alloy reacts with  $\text{Mg}_2\text{Ni}$  to form an oxide which is discharged. The resulting vanadium solid solution is a body centered cubic structure as identified by X-ray diffraction. See paragraph 56. Therefore, Tsukahara simply teaches that an inexpensive vanadium alloy containing a high oxygen concentration can be used as a raw material for manufacturing a vanadium-based hydrogen absorbing alloy by melting the raw vanadium-based alloy with a deoxidizer, wherein the crystal structure is that of a body-centered cubic structure.

Yanagihara does not discuss the need or suggest the desirability of reducing oxygen concentration in a raw alloy, much less adding  $\text{Mg}_2\text{Ni}$  to remove oxygen contained in a raw alloy. Further, Yanagihara simply does not discuss, in any respect, the potential utilization of an Mg-Ni alloy for application in the nickel based alloy described therein. Therefore, one skilled in the art would not be motivated by Yanagihara to look to an Mg-Ni alloy as described in Tsukahara. Also, Tsukahara’s reasons for adding  $\text{Mg}_2\text{Ni}$  to a vanadium-based alloy would not necessarily apply to the nickel-based alloy of Yanagihara. Tsukahara does not suggest that such a deoxidizer can be successfully added to a nickel-based alloy as described in Yanagihara. Additionally, the Office has not provided any rationale for why the resulting body centered cubic structure teachings of Tsukahara are applicable to the hexagonal crystal structures taught by Yanagihara nor why one skilled in the art would be motivated to combine teachings related to

different crystal lattice structures. Accordingly, the necessary suggestion or motivation to combine or modify the references in the manner asserted by the Office is lacking.

According to MPEP 2144.05, a particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). Applicants submit that the effect of providing of an Mg alloy source material to a melt in an amount of 0.1 to 1.0% by weight based on the entire weight of the hydrogen absorbing alloy was not recognized prior to the claimed invention. Specifically, the claimed range allows for an alloy which exhibits an improved discharge rate, previously only recognized in lower cobalt contents wherein the high discharge rate is attributed to the promotion of particle size reduction, while simultaneously suppressing particle size reduction and maintaining the capability of absorbing a relatively large amount of hydrogen. Yanagihara simply does not recognize this result nor provide any guidance for the addition of an Mg alloy source material to a melt in an amount of 0.1 to 1.0% by weight based on the entire weight of the hydrogen absorbing alloy. Accordingly, the necessary suggestion or motivation to modify Yanagihara in the manner suggested by the Office is not present.

Since there is no suggestion or motivation for modifying or combining the references, the Office has not established a *prima facie* case of obviousness. Accordingly, applicants request the withdrawal of the rejections under 35 U.S.C. §103(a).

### **Conclusion**

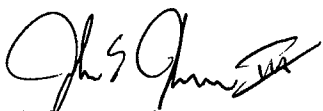
In view of the amendments and remarks above, Applicants submit that the pending claims are now in condition for allowance and respectfully request that the claims be allowed to issue. If the Examiner wishes to discuss the application or the comments herein, the Examiner is urged to contact the undersigned by telephone.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper.

Application No.: 10/793,031  
Amendment Dated December 4, 2006  
Reply to Office Action of August 2, 2006

However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'John E. Johnson, III', with a stylized flourish at the end.

John E. Johnson, III  
Registration No. 58,367

**Customer No. 00826**  
**ALSTON & BIRD LLP**  
Bank of America Plaza  
101 South Tryon Street, Suite 4000  
Charlotte, NC 28280-4000  
Tel Charlotte Office (704) 444-1000  
Fax Charlotte Office (704) 444-1111  
LEGAL02/30136365v1

**ELECTRONICALLY FILED USING THE EFS-WEB ELECTRONIC FILING SYSTEM OF THE UNITED STATES PATENT & TRADEMARK OFFICE ON DECEMBER 4, 2006.**